ANALYSIS OF YOUNG SMALL FIRMS THAT HAVE CLOSED: DELINEATING SUCESSFUL FROM UNSUCCESSFUL CLOSURES

by

Timothy Bates *
Wayne State University

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Abstract

This study of small businesses created between 1989 and 1992, and then closed down between 1993 and 1996, reveals that owners often described their firms as successful" when the disclosure decision was made. . Theoretical explanations consistent with this pattern are explored in this study. One view describes successful closures as rational outcomes of learning processes undertaken by entrepreneurs opening firms amidst considerable uncertainty. Another approach sees the seeming paradox of successful closure in terms of alternative opportunities: if something better comes along, the entrepreneur may close down. Empirically, successful closure owners are found to be moving on to more attractive alternatives.

JEL Classification: M13 Entrepreneurship

Introduction

In his review article on the turnover and mobility of firms, Richard Caves commented at length on studies analyzing discontinuance patterns among both establishments and firms. Mirroring the literature that he was reviewing, Caves used various terms interchangeably as he described firm discontinuance, including "exit", "mortality", "closure", "death", and "failure", among others. Summarizing the conventional wisdom on new firm formation, Caves observes that "entrants suffer high rates of infant mortality" (1998, p. 1954). Value-laden terms such as "failure" and "death" are often used interchangeably with neutral terms ("exit", for example). On balance, both Caves and the broader applicable literature often equate closure of firms with a negative outcome, failure (Gimeno et al., 1997).

According to recent small-business data generated by the U.S. Bureau of the Census, owners of firms that have discontinued operations often view their businesses as "successful" at the time the decision was made to cease operations. This study uses Census Bureau Characteristics of Business Owners (CBO) data to analyze representative, nationwide samples of small businesses that began operations between 1989 and 1992. Among firms actively doing business in 1992, 36.0 percent of them had closed down by 1996: among the owners of these closed firms, 37.7 percent described their firms as "successful" at the time when the owner decided to discontinue operations. If one equates firm closure with failure, then an anomaly is created by presence of successful failures.

Findings of this study indicate that common owner and firm traits delineate successful from unsuccessful small-business closures. Measures of owner human-capital

traits identify owners of unsuccessful closures as those lacking high-school degrees as well as specific experience in the industry in which they chose to establish a small business. Owner demographic traits -- gender and race -- strongly delineate successful from unsuccessful closures. Large capitalization at startup, furthermore, predicts unsuccessful closure among the firms active in 1992 that had shut down by 1996.

Findings of this study indicate that successful and unsuccessful small business closures are distinct groups differing systematically regarding firm traits and owner characteristics. If a more attractive opportunity comes along, the owner of a successful young firm may chose to close down the operation in order to pursue the attractive alternative. Firms that have closed in such circumstances are not failures. The common practice of applying negative connotations uncritically to small firm closure—failure, death, and the like—should be abandoned. This practice is neither theoretically nor empirically justifiable.

Theoretical Framework

Gimeno et al. (1997) observe that poorly performing firms may opt to remain in operation while firms of similar size and scope – operating in the same industry – may rationally decide to shut down, even though they are performing well. Their claim is primarily a theoretical observation grounded in opportunity cost considerations. The opportunity costs of pursuing business ownership are, by definition, the payoff to be realized by deploying one's resources – one's hours of work and one's capital – in alternative pursuits. Entrepreneurs, from this perspective, are viewed as choosing between remaining in one's current venture or obtaining alternative employment. If one remains with the current venture, it is because alternatives are less attractive. Departure

from one's business venture is not necessarily rooted in failure or even performance that lags behind one's expectations; departure requires only that a superior alternative has become available to the entrepreneur.

Scholars have observed repeatedly, since the 1980's, that minority-business owners often persevere in low-profit niches such as ghetto retailing and personal services. Bates (1989) found that black-owned businesses operating in inner-city minority communities were more likely to remain in operation if their owners were high-school dropouts, controlling for other business and owner traits. Personal service firms – beauty parlors, most commonly – operating in this environment generated low returns and the median owner was a female high-school dropout. Yet survival rates in this niche were well above the average reported by black-owned firms generally.

Sociologists studying self-employment among Asian immigrants have observed that blocked mobility pushes those lacking English fluency toward small-business ownership. Min (1984) documented that college-educated Koreans often confront serious language barriers that hamper their employment prospects. College graduates, blocked from managerial and professional jobs, therefore opted to start their own firms. Waldinger (1986) concluded that Asian immigrants pursued self-employment less as a matter of preference and more as a matter of blocked mobility: impediments to more attractive alternatives included foreign educational credentials that were viewed skeptically by potential employers. When sociologists attribute immigrant self-employment to blocked mobility, they are simply observing that the opportunity costs of self-employment are low (Bates, 1997).

Gimeno et al. (1997) operationalize the opportunity-cost concept, putting forth the following firm-closure criterion: the entrepreneur is expected to terminate the business if the expected utility of alternative employment, minus the cost inherent in switching, exceeds the expected utility of remaining in the entrepreneurial venture (Gimeno et al., 1997, p.54).

Ronstadt surveyed 3500 alumni of Babson College about their entrepreneurial careers, focusing upon those who had left their small-business ventures. A subset was identified – ex-entrepreneurs – and a descriptive post mortem was conducted on 95 Babson graduates who had closed down their first entrepreneurial venture. No attempt was made to control statistically for various firm and owner traits (Ronstadt, 1986). Ronstadt found that the ex-Babson entrepreneurs, despite leaving their ventures, often re-entered small business ownership: 49 percent of them established another small business subsequent to leaving their first venture. Second, many ex-entrepreneurs noted only positive, opportunistic reasons for making shifts from entrepreneurship to employee status (Ronstadt, 1986).

Ericson and Pakes (1995) developed an "active learning" model of firm creation in which an entrepreneur was seen as investing in uncertain but expectedly profitable innovations. Noting the great variability in the fate of similar firms over time, Ericson and Pakes created a theoretical model of entry that allowed for idiosyncratic uncertainly. The crux of the active learning model was an entrepreneur exploring a speculative idea: To learn the value of the opportunity, the entrepreneurs had to invest, i.e. create a firm and enter the applicable industry. Investment to enter was a sunk cost, perhaps partially recoverable (Ericson and Pakes, 1995). By assumption, the value of the idea was

unknowable ex-ante. The idea "must be tried, and time, money, and effort invested, before competitiveness can be precisely known" (Ericson and Pakes, 1995, p.57).

Setting up a firm is viewed as an active learning process, and the value of the knowledge thus obtained is the property of the entrepreneur, quite irrespective of whether or not the firm remains in operation. In this theoretical model, the firm "may well find itself in a situation in which its idea is not perceived to be worth developing further, so that the enterprise is best liquidated and its salvageable resources committed to an alternative use. Hence the model generates exit as a natural outcome of an evolutionary process" (Ericson and Pakes, 1995, p.55). Whether or not the venture was successful, in this case, depends upon the value of what the entrepreneur learned (relative to the costs incurred). A successful closure may represent the owner's decision to redeploy the knowledge gained in the entrepreneurial venture in some other context, perhaps another small business.

Summarizing implications of the learning models of small-business formation, Caves states that "firms make their entry investments unsure of their success and do not initially position themselves at a unique optimal size" (1998, p.1956). Assuming sunk costs of entry, it follows that new entrants may choose to increase their odds of eventual firm closure. Entrants holding more positive expectations about their uncertain prospects make larger initial commitments. The less confident entrant might rationally start out small even if the industry's technology supports a large optimal scale. Starting small limits its sunk cost commitment, yet enables the entrepreneur to engage in the learning process that is accessible only to those who launch firms. It often pays the potential entrant to invest for a close look at his/her chances. "To put the point provocatively, we

have thought that many entrants fail because they start out small, whereas they may start with small commitments when they expect their chances of success to be small. At the same time, small-scale entry commonly provides a real option to invest heavily if early returns are promising" (Caves, 1998, p.1961).

Firms that close down, Caves concluded, cannot be categorized as failures merely because they have shut down. "We understand that the diverse fates and frequent failures of new firms reflect hidden information and option-value considerations, and need not be written off to cannon fodder…" (1998, p.1976).

Operationalizing an Empirical Analysis of Successful and Unsuccessful Closures

1. Data considerations

The above discussion of opportunity costs, thresholds, blocked mobility, learning models, and the like has not, to date, been well grounded in empirical analysis of firm closures. A breakthrough in the form of the Census Bureau's CBO database, released in 1998, enables classification of business closures into successful and unsuccessful subsets. Whether an owner shutting down a small business has been successful or unsuccessful is the subjective opinion of the owner. How then does one classify closed firms? The approach taken in this study entailed asking the owner: at the point when the decision was made to close this firm, was the status of the business successful or unsuccessful?

Firms analyzed in this study were drawn from the Census Bureau's CBO database and all were actively operating in 1992. In late 1996, a large, nationwide representative sample of small-business owners was surveyed by the Census Bureau and asked, "Is the business you owned in 1992 still operating?" This study focuses upon the firm owners responding "No". All such owners were then asked: "Which item below best describes

the status of this business at the time the decision was made to cease operations?" Respondents could check either "successful" or "unsuccessful".

Thus, a firm classified as a successful closure is "successful" in the sense that its owner felt that the term "successful" was a more accurate description of the status of the firm than "unsuccessful." Successful and unsuccessful were the only two choices offered.

This study analyzes firms started or entered into by their 1992 owners of record during the 1989 through 1992 period. In this sense, they are young firms. All owners/ firms under consideration filed small-business income-tax returns reporting 1992 sales revenues of at least $5,000. The young (1989-1992 entrants) subset of CBO firms fitting this profile produced a sample of 9197 small businesses. Of these 9197, this study analyzes the 1425 that had shut down by late 1996: 526 of these were successful and 899 were unsuccessful. The CBO database is constructed with an oversampling of employer firms and minority-owned businesses. Data reported in this study are weighted to correct for these oversampling patterns. Additional detail on the nature of the CBO database appears in Bates (1997). Among the 1,425 closures, weighed shares of successful and unsuccessful firms are 37.7 percent and 62.3 percent respectively.

2. Hypotheses

For several decades, scholars have been actively exploring predictors of new-venture performance, yet relationships between initial firm/owner resources and subsequent performance are still in dispute. The most commonly used performance measure in studies of small business has been firm survival. A major reason for inconsistent findings to date is identified by Cooper et al. (1994): "Much of the new

venture literature implicitly assumes that survival and success both reflect the same underlying process" (p.375).

The hypothesis explored in this study is that closed firms are a diverse group. This hypothesis is tested by examining young firms that have not survived, and differentiating the successful from the unsuccessful closures. A finding that these groups have significantly different characters suggests that closures are a heterogeneous group.

The theoretical section of this study contained numerous implicit hypothesis differentiating successful from unsuccessful closures, and it is worthwhile to spell them out explicitly.

a. <u>Owner human capital and demographic traits</u>

Studies of minority-owned businesses have repeatedly indicated that the minority trait, often in combination with other disadvantages, such as poor language fluency, spells low-self-employment opportunity costs. High barriers, blocked mobility, limited alternatives to work as a paid employee, and the like are all complementary ways of stating that the opportunity costs of self-employment are low (Bates, 1997; Min, 1984; Min, 1993; Waldinger, 1986). To this broad characterization of minority disadvantage, Cooper et al. (1994) add gender: "we might expect women and minority entrepreneurs to have fewer opportunities to develop relevant experience, to have fewer contacts who can provide assistance, and to have greater difficulty in assembling resources" (p.376).

Regarding successful versus unsuccessful closures, the applicable hypothesis is that disadvantaged subgroups – demographically defined – have lower opportunity costs of remaining self-employed than the advantaged groups. Almost by definition, the advantaged groups – nonminority and male – have broader alternatives, and hence, higher

opportunity costs of remaining self-employed. In general, higher opportunity costs/attractive alternatives to one's current venture are expected to be associated with successful closures; lower opportunity costs predict unsuccessful closures.

More and less advantaged business owners are identified by more than demographic traits. Owner education and skills acquired through past training and work experience are determinants of the opportunity costs. The poorly educated owner is assumed to have few attractive alternatives to self-employment; the better educated owner has more attractive alternatives (Bates, 1990; Evans and Leighton, 1989; Cooper et al., 1994; Gimeno et al., 1997). The same general assumption applies to the more skilled versus the less skilled business owner.

One particular type of skill is particularly relevant to explaining patterns of small-business performance. Owners starting firms in fields where they have specific work experience – accountants opening accounting firms – are expected to outperform those lacking such industry-specific work experience (Bruderl et al., 1992). "Entrepreneurs who came from similar businesses may bring with them directly relevant knowledge bases, experience, and relationships that significantly reduce the liability of newness" (Cooper et al., 1994, p. 379). Bringing industry-specific experience to one's new-business venture enhances performance; operating one's own firm is hypothesized to enhance further one's industry-specific experience. A business owner thusly experienced is hypothesized to be drawn out of self-employment – induced to close one's firm – when superior alternatives beckon: stronger human capital generally, and industry-specific experience specifically, "broaden the opportunity set of the entrepreneurs and raise their expected income from alternative employment" (Gimeno et al., 1997, p.756).

b. Financial capitalization at startup

The classic small-business failure is the bankrupt venture, the firm closing with unpaid bills. According to Ronstadt (1986), financial concerns alone accounted for 31 percent of the exits among the previously discussed Babson entrepreneurs. "More initial capital buys time, while the entrepreneur learns or overcomes problems" (Cooper et al., 1994, p.379). For the young firm, initial capital endowments serve as a buffer, heightening its ability to withstand periods of poor business performances (Gimeno et al., 1997). These observations suggest that thinly capitalized young firms may be forced to close down during difficult periods, due to illiquidity problems creating an inability to pay one's bills. Implicitly, this position assumes that short-term borrowings are either unavailable or inadequate to serve the buffer role attributed to startup capitalization. The poorly capitalized firm is thus hypothesized to be a stronger candidate for unsuccessful closure, other factors constant.

Yet, proponents of active learning theories hypothesize the exact opposite relationship between firm startup capitalization and success/lack of success at closure. Low startup capitalization, in this view, reflects less positive expectations about the prospects of the new venture. Given the sunk costs of entry, it is the entrant with the more positive expectations of new-firm performance who makes the larger initial firm investments. The less confident may rationally choose to increase their risk of closure by starting out small, thus minimizing their sunk costs. These are the entrants who, according to Caves (1998), invest to take a close look at their chances. Smaller firm capitalization at startup, in this view, characterizes the entrepreneurs less confident of viability and hence, more expectant of the necessity of closing the firm after learning

more about the business: "they may start with small commitments when they expect their chance of success to be small" (Caves, 1998). These entrants have paid to take a look; if the resultant learning experience is valuable, closure is apt to be successful.

Making a large commitment reflects very different expectations: closure is seen as a less likely outcome. Closure involves absorbing larger sunk costs, meaning that the net value of the learning experience is more likely to be negative, in light of those sunk startup costs (Frank, 1988). The hypothesized relationship between startup capitalization and successful closure is thus the opposite of the buffer hypothesis. From the buffer approach perspective, larger capitalization predicts success; for the learning-model economists, smaller capitalization predicts success among the closed firms.

c. Owner age at startup

Owners approaching retirement age are expected to slow down, and the choice of continuing to run a small business must be weighted against the alternative of retiring. In this context, the more profitable firm permits the elderly entrepreneur who is a target saver to accumulate the resources to finance retirement more quickly than the elderly owner of the less profitable firm. Getting older thus increases the odds of retiring from small-business operation (Bates, 1990), and the actual retirees are hypothesized disproportionately to be successful at the point when they choose to discontinue their firms. Note that another alternative is to sell (or give away) one's firm. This outcome – which is much less common than firm closure – is not explored in this study.

Gimeno et al. (1997), focusing upon older business owners who are not contemplating retirement, hypothesize that "older people have less time to recoup the costs associated with switching jobs" (p.759). Older owners will therefore be less willing

to switch, suggesting that the younger owner, other factors constant, is more likely than his/her older counterpart to be connected with a successful business closure.

d. Industry of operation

Bates (1997) found that manufacturing, wholesaling, and retailing were the lines of small business in which average startup capitalization was highest. According to the active-learning-theory model, business startups in these fields incur higher sunk costs, on average, than those in less capital-intensive lines of business. Assuming that high sunk costs create an aversion to closing down a business, other factors constant, the hypothesis that follows logically is that closures in manufacturing, wholesaling, and retailing are less likely to be successful than closures in other industries.

Another industry grouping in services is skill intensive in the sense that entrants are predominantly college graduates. Lines of services fitting this profile include professional services, finance, insurance, real estate, and business services (Bates, 1997). This group makes up the skill-intensive services, fields in which owner human-capital endowments are higher and financial capital invested at startup is lower, on average, than in manufacturing, wholesaling, and retailing. These lower sunk costs are hypothesized to be associated with increased chances of success at closure, other factors constant.

Construction, finally, is a unique field in which the self-employed are prone to switch to employee status and then, again, to self-employed status, depending upon the nature of currently available work alternatives. Indeed, the distinction between working on a job as an independent contractor (a small business, according to Census Bureau definitions) and an employee may be minor. Recall that Gimeno et al. (1997) specified a criterion for exiting a small firm that is particularly applicable to the self-employed in

construction: if the expected payoff of the alternative employment, minus the cost inherent in switching, exceeds the payoff of remaining self-employed, then one will exit one's current self-employment/small business activity. Construction is an industry where successful closure should be more widespread, other things equal, than in other fields.

e. Other hypothesized relationships

Perhaps the most widely observed relationship between firm traits and closure patterns is the fact that younger small businesses are more likely to shut down than older firms. Age of firm is included as a control variable, since we lack theories and evidence associating the young closure with success or its opposite. The second control variable is the number of hours that the owner worked in the firm during the calendar year of 1992 (owner labor input). The final control variable delineates firms started de novo from owners who entered small business by purchasing a firm that was already in operation (ongoing firm).

Recall that women owners were hypothesized to be associated with unsuccessful closures due to their lower opportunity costs of self-employment relative to men. Yet, another strand of the small-business literature links women owners to alternatives of family interests and parenting. The traditional role of women in the labor market is summed up by Gutek and Larwood (1989) as follows: "Men had careers; women had temporary employment or jobs that took second place to family interests and obligations" (p.8). Carr (1996) and Boden (1996) both find that having young children has a differentially strong, positive influence on women's selection into self-employment. Anna et al. (1999) suggest that women's career paths differ from men because of parental role expectations and other factors. The alternative that may induce women to close

firms need not be attractive salaried employment; it may be, instead, the desire to devote more time to parental responsibilities. Thus, the hypothesized relationship between owner gender and success at closure is indeterminate.

f. Summary of hypotheses

On balance, success at closure is hypothesized to be directly related to 1) higher levels of owner education; 2) owners being skilled/ experienced in the field of their small business prior to establishing that business; 3) owner nonminority race/ ethnicity; 4) owners establishing firms in skilled services or construction. Conflicting hypothesis suggest indeterminant relationships between firm success at closure and 1) firm startup capitalization, 2) owner age, and 3) owner gender.

Empirical analysis of successful and unsuccessful closures

Table one summarizes firm and owner traits for the successful and unsuccessful small-business closures. A human-capital trait revealing stark differences was the owner-experience-in-this-line-of-business characteristic: 46.8 percent of the owners of unsuccessful closures had such experience, while 70.3 percent of the successful closure owners had industry-specific experience. Minority owners were heavily overrepresented in the unsuccessful closure category.

[Table one about here]

In the regression analysis of firms operating in 1992 that had shut down by late 1996, positive variable coefficient values are associated with successful closures, and vice versa. The dependent variable in the logistic regression models (table two) is equal to one for successful closures and zero for unsuccessful closures. Firms sold to a new owner, merged, or otherwise acquired that are still in operation in 1996 are, of course, not

closed down and hence not relevant to the analysis of closed firms. Precise definitions of explanatory variables are spelled out in the appendix.

Logistic regression exercises (table two) delineating successful from unsuccessful closures produce results broadly consistent with hypothesized relationships. The owner human-capital variables measuring education and experience strongly delineate successful from unsuccessful closures, indicating that owners facing high self-employment opportunity costs are more likely than others to rate their firm successful at the point when the decision was made to close. Explanatory variables (table two) measuring owner education levels were binary variables, and the excluded variable identified high-school dropouts. Thus, the strong, positive coefficients attached to the owner-education-level variables are measuring education's impact relative to the high-school dropout group. Something of a threshold is apparent here: lacking a high-school degree is associated strongly with reduced labor-market alternatives and hence, low self-employment opportunity costs. This trait, in turn, strongly inclines the owner to be in the unsuccessful closure group. Owners lacking experience in their line of small business are similarly inclined toward unsuccessful closure. Owners possessing both of the negative human-capital traits – high school dropouts and no experience in their specific line of business – are predicted, by the logistic regression models, rarely to be successful closures.

[Table two about here]

The financial capital at startup variable (capital (log)) coefficient associates higher initial capitalization with increased likelihood of unsuccessful closure. The learning-theory economists who interpret startup capital as sunk costs are supported for their

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interpretation of closure in these regression analysis (table two) findings. The low capitalization link to successful closure (and vice versa) is strong statistically. The competing hypothesis – that initial capital is a buffer, shielding the firm from illiquidity and possible involuntary closure – receives no empirical support.

Hypothesized relationships linking owner age to successful closure appeared to be at odds, but the regression analysis findings support both interpretations. The Gimeno et al. (1997) hypothesis was that the older business owners were less likely to switch out of their current activity than younger owners. The negative coefficient attached to the owner age variable in table two's regression model supports this position. Bates (1990) hypothesized that owners approaching retirement age were more likely to be successful closures than others. This is supported by the positive value of the owner age squared coefficient. Getting older, then, is both negatively and positively related to successful closure; the applicable relationship is nonlinear.

The minority variable coefficient, as expected, supported the hypothesis that minorities have lower self-employment opportunity costs than nonminority whites. Firm closures, among minority owners, are disproportionately unsuccessful closures.

The negative, statistically significant gender coefficient suggests that women-owned businesses are more likely to be successful closures than men. Indeed, 47.7 percent of the women-business closures were successful, versus 33.6 percent of those owned by men. If the opportunity costs of self-employment are thought of narrowly as alternative employment opportunities, then men small-business owners are apt to have higher opportunity costs attached to staying with their current venture than women. What is drawing women away from small firms that they self-identify as successful at closure?

The only existing explanation for this strong pattern is the parental expectations/ responsibilities noted by Anna et al. (1999). Yet "women" and "parent" are not synonymous. The strong finding of women exiting from successful small businesses more frequently than men requires closer examination.

Two logistic regression models were used to explore factors that differentiate successful from unsuccessful closures (table two). Model two added explanatory variables identifying four industry groups: 1) construction, 2) manufacture and wholesale, 3) retail, and 4) skill-intensive services. Also included in model two were the firm-and-owner-trait variables from model one. Two models were used because of potential multicolliniarity problems: skill-intensive services largely attract college-graduate owners; capital-intensive lines of business attract large startup capitalization.

Model one (table two) showed that owners with graduate-school education backgrounds were likely to be associated with successful closures. Yet these highly-educated owners were also concentrated in skilled-services industries. Is it the industry trait or the education trait (or both) that links the highly educated to successful closure? In fact, adding four industry variables to the regression analysis (model two) has little impact on the other variable coefficients. The control variable, "bought ongoing firm", experienced a coefficient change that nullified it's statistical significance (model one). Most owners entering small business by purchasing firms that were already in operation bought retail firms.

Recall that skilled services and construction (low sunk costs) were hypothesized to be related to successful closure, while the retail, manufacture and wholesale fields (high sunk costs) were expected to be unsuccessful closures. The table two findings

identified skill-intensive services with successful closure, while the opposite pattern described retailing. Other industry identifier variables were not significant, nor were the control variables measuring firm age and owner labor input.

<u>Concluding Remarks</u>

Select subgroups – women, firms in skill-intensive services – were often self-identified by their owners as successful at closure. These owner and firm traits often cluster: college graduates usually have prior experience in the field where they set up small businesses, and they concentrate in skill-intensive service fields. Possessing multiple traits linked to successful closure, few owners in such clusters rate their firms as unsuccessful at closure. Thus, for certain common clusters of firm and owner traits, success at closure is the norm. The high human-capital, skilled-services cluster also fits the portrait of high self-employment opportunity costs and low sunk costs at the point of entry that was hypothesized to predict successful closure.

Another cluster – high school dropout, no prior experience in the line of business, establishing a retail firm – predicts a high likelihood of unsuccessful closure. This portrait is one of low self-employment opportunity costs and high sunk costs at entry.

The average unsuccessful closure invested more financial capital at startup ($16,566) than the $13,882 committed by the successful closed firm (table one). The successful owner subset broadly appears to enjoy attractive opportunities to pursue alternatives, and they are less burdened by sunk costs than their unsuccessful counterparts. Assuming that closure and failure are synonymous in this set of circumstances is not reasonable. Closed small businesses are a diverse group, and owners often close firms for reasons other than failure.

References

Anna, A., Chandler, G., Jansen, E., and Mero, N. 1999. Women business owners in
traditional and non-traditional industries. Journal of Business Venturing. 15:
279-303.

Bates, T. 1989. Small business viability in the urban ghetto. Journal of Regional Science.
29: 625-643.

Bates T. 1990. Entrepreneur human capital inputs and small business longevity. The
Review of Economics and Statistics. 72: 551-559.

Bates, T. 1997. Race, Self-Employment, and Upward Mobility. Baltimore: Johns
Hopkins University Press.

Boden, R. 1996. Gender and self-employment selection: An empirical assessment.
Journal of Socio-Economics. 25: 671-682.

Bruderl, J., Prusendorfer, P., and Zeigler, R. 1992. Survival chances of newly founded
business organizations. American Sociological Review. 57: 227-241.

Carr, D. 1996. Two paths to self-employment? Women's and men's self-employment in
the United States. Work and Occupations. 23: 26-53.

Caves, R. 1998. Industrial organization and new findings on the turnover and mobility
of firms. Journal of Economic Literature. 36: 1947-1982.

Cooper, A., Gimeno-Gascon, F., and Woo, C. 1994. Initial human capital and financial
capital as predictors of new venture performance. Journal of Business Venturing
9: 371-395.

Ericson, R., and Pakes, A. 1995. Markov-perfect industry dynamics. <u>Review of Economic Studies.</u> 62: 53-82.

Evans, D., and Leighton, L. 1989. Some empirical aspects of entrepreneurship. <u>American Economic Review.</u> 79: 519-535.

 Frank, M. 1988. An intertemporal model of industrial exit. <u>Quarterly Journal of Economics.</u> 103: 333-344.

Gimeno, J., Folta, T., Cooper, A., Woo, C. 1997. Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms. <u>Administrative Science Quarterly</u> 42: 750-783.

Gutek, B., and Larwood, L. 1989. <u>Women's Career Development</u> (Newbury Park, CA: Sage).

Min, P. 1984. From white collar occupations to small business: Korean immigrants' occupational adjustments. <u>Sociological Quarterly.</u> 25: 333-352.

Min, P. 1993. Korean immigrants in Los Angeles. I. Light and P. Bhachu, eds. <u>Immigration and Entrepreneurship: Culture, Capital, and Ethnic Networks</u> (New Brunswick, NJ: Transaction Publishers).

Ronstadt, R. 1986. Exit, stage left: Why entrepreneurs end their entrepreneurial careers before retirement. <u>Journal of Business Venturing.</u> 1: 323-338.

Waldinger, R. 1986. <u>Through the Eye of the Needle</u> (New York: NYU Press).

Appendix: Regression Analysis Variable Definitions

The dependent variable in the logistic regression exercises of table two is whether the business that has closed down was judged by its owner to be successful or unsuccessful at the point when the decision to close was made. Successful businesses are coded equal to one; unsuccessful ones are set equal to zero. Independent variables are defined below:

High school: For owners graduating from high school but not attending college, this variable = 1; (otherwise = 0).

College, 1-3 years: For owners attending college but not attaining a bachelor's degree, this variable = 1; (otherwise = 0).

College graduate: For owners awarded a bachelor's degree, this variable = 1; (otherwise = 0).

Graduate school: For owners attending professional school, or receiving a masters or doctorate degree, this variable = 1; (otherwise = 0).

Experience in this line of business: For owners with work experience in the specific field of their small business, which was acquired before starting their small business, this variable = 1; (otherwise = 0).

Owner labor input: Number of hours during the 1992 calendar year spent by the owner working in the relevant small business, divided by 100.

Gender: For male owners, gender = 1; (otherwise = 0).

Owner age: A continuous variable measured in years.

Owner age squared: Self explanatory.

Minority: If the firm was 51% or more minority owned, then this variable = 1; (otherwise = 0).

Capital (log): The log of the sum of debt and equity capital used to start or become owner of the business.

Bought ongoing firm: If the owner acquired the business while it was already in operation, then this variable = 1; if the owner was the original founder of the firm, then ongoing = 0.

Year entered, 1992: If the business was started or ownership was acquired during 1992, then this variable = 1; (otherwise = 0).

Year entered, 1991: See above and insert 1991.

Industry of operation: A series of self-explanatory binary variables for identifying major industry groups.

Table one: Traits of Closed Firms and their Owners: Comparing Successful and
Unsuccessful Closures

	Firms successful at closure	Firms unsuccessful at closure
A. Firm Traits		
Firm startup capitalization (mean)	$13,822	$16,566
Industry of operation:		
Construction	17.1%	17.6%
Manufacture, wholesale	4.7%	5.5%
Retail	5.8%	16.4%
Skilled Services	48.1%	30.5%
Other industries	24.3%	30.0%
B. Owner traits		
% of owners who have not finished high school	3.7%	13.1%
% of owners who are college graduates	35.9%	31.0%
% of owners experienced in this line of business	70.3%	46.8%
% male owners	63.2%	75.5%
% minority owners	7.8%	13.0%
Owner # hours worked in firm, 1992 (mean)	1570 hours	1826 hours
n (unweighted)	526	899
n (weighted)	537	888

Source: U.S. Bureau of the Census CBO Database

Table two: Logistic Regression: Among Firms that have Discontinued Operations,
Delineating Unsuccessful from Firms that were Successful at Closure

	Model 1:	Model 2:	Variable mean
	Regression Coefficient (standard error)	Regression Coefficient (standard error)	
Constant	-.229 (.730)	-.490 (.743)	---------
Education			
High School	1.264* (.305)	1.258* (.311)	.285
College, 1-3 years	1.210* (.303)	1.195* (.309)	.291
College graduate	1.430* (.304)	1.322* (.310)	.233
Graduate School	1.866* (.347)	1.709* (.345)	.096
Experience in this line of business	1.161* (.138)	1.137* (.140)	.557
Owner labor input	.007 (.006)	.006 (.006)	15.965
Gender	-.731* (.142)	-.668* (.148)	.709
Owner age	-.073* (.034)	-.067* (.034)	41.239
Owner aged squared	.001* (.000)	.001* (.000)	1865.1
Minority	-.520* (.213)	-.541* (.215)	.110
Capital (log)	-.132* (.016)	-.121* (.016)	5.893
Bought ongoing firm	-.414* (.189)	-.315 (.195)	.153
Year entered			
1992	.093 (.149)	.117 (.150)	.373
1991	.269 (.166)	.312 (.168)	.225
Industry of operation			
Construction		.070 (.198)	.174
Retail		-.481* (.241)	.124
Manufacture, wholesale		.189 (.298)	.052
Skilled services		.377* (.162)	.372
n	1425	1425	
-2 Log L	1612.5	1597.0	
Chi square	297.3	312.8	

*Statistically significant at the five percent level.